

IN THE CLAIMS:

Please add new claims 59–64

Please amend claims 1 and 25 as follows:

1. (currently amended) An apparatus for processing a portion of an automobile body, the portion including a concave portion which extends along a curved line in a substantially longitudinal direction of the automobile body and has opposing side walls and a bottom, comprising:

a processing device;

a supporting device movably supporting the processing device and comprising a supporting block and a slidably supported structure, the slidably supported structure being movably engaged with the supporting block and free to exclusively slide in a widthwise direction of the automobile body, wherein such movement of the slidably supported structure is solely and directly in response to the processing device contacting the concave portion while the processing device moves relative to and along the concave portion, and

a longitudinal drive device for moving the slidably supported structure relative to the automobile body in a longitudinal direction of the automobile body;

wherein the processing device is mounted to the slidably supported structure and includes a processing head having a tip for engaging either of the side walls and the bottom of the concave portion ~~of the automobile, the processing device being vertically pivotally supported by the slidably supported structure so that the tip of the processing head contacts the bottom of the concave portion to follow the configuration of the bottom of the concave portion only by the gravity force of the processing head,~~ the processing head moving in the widthwise direction in response to the tip contacting either of the side walls of the concave portion when the slidably supported structure is moved relative to the automobile body by the longitudinal drive device.

2.-5. (canceled)

6. (previously presented) An apparatus according to Claim 1, further comprising a transverse direction driving device for moving the processing device in a width direction of the automobile body.

7. (previously presented) An apparatus according to Claim 6, further comprising a position detector for detecting the relative positions of the supporting device and the portion of the automobile body being processed, wherein a transverse direction driving device drives the slidably supported structure based on detection signals generated by the position detector.

8. (previously presented) An apparatus according to Claim 1, wherein the processing device is movably supported on the slidably supported structure in a vertical direction of the automobile body.

9. (original) An apparatus according to Claim 8, further comprising a vertical direction driving device for moving the processing device in a vertical direction with respect to the automobile body.

10. (previously presented) An apparatus according to Claim 9, further comprising a position detector for detecting the relative positions of the automobile body and the supporting device, wherein the vertical direction driving device drives the processing device based on detection signals generated by the position detector.

11. (canceled)

12. (previously presented) An apparatus according to Claim 1, further comprising a transverse direction driving device for moving the processing device in a width direction of the automobile body and a vertical direction device for moving the processing device in a vertical direction of the automobile body.

13. (previously presented) An apparatus according to Claim 12, further comprising a position detector for detecting the relative positions of the automobile body and the supporting device, wherein the transverse direction driving device and the vertical direction driving device drive the processing device based on detection signals generated by the position detector.

14.-18. (canceled)

19. (withdrawn) A method for processing a portion of an automobile body using a processing device comprising:

moving a supporting device relative to the portion of the automobile body being processed while movably supporting the processing device on the supporting device.

20. (withdrawn) A method according to Claim 19, further comprising moving the supporting device relative to the portion of the automobile body being processed by moving the automobile body.

21. (withdrawn) A method according to Claim 19, further comprising moving the supporting device relative to the portion of the automobile body being processed by moving both the automobile body and the supporting structure.

22. (withdrawn) A method according to Claim 19, further comprising moving the supporting device relative to the portion of the automobile body being processed while movably supporting the processing device in a vertical direction with respect to the automobile body.

23. (withdrawn) A method according to Claim 19, further comprising moving the supporting device relative to the portion of the automobile body being processed while

movably supporting the processing device in a width direction with respect to the automobile body.

24. (withdrawn) A method according to Claim 19, further comprising moving the supporting device relative to the portion of the automobile body being processed while movably supporting the processing device in a vertical direction and in a width direction with respect to the automobile body.

25. (currently amended) An apparatus for processing a portion of a workpiece, the portion including a concave portion which extends along a curved line in a substantially longitudinal direction of the workpiece and has opposing side walls and a bottom, comprising:

a processing device;

a supporting device movably supporting the processing device and comprising a supporting block and a slidably supported structure, the slidably supported structure being movably engaged with the supporting block and free to exclusively slide in a widthwise direction of the workpiece, the widthwise direction being orthogonal to the longitudinal direction, wherein such movement of the slidably supported structure is solely and directly in response to the processing device contacting the concave portion while the processing device moves relative to and along the concave portion, and

a longitudinal drive device for moving the slidably supported structure relative to the workpiece in a longitudinal direction of the workpiece;

wherein the processing device is mounted to the slidably supported structure and includes a processing head having a tip for engaging either of the side walls and the bottom of the concave portion of the workpiece, the processing device being vertically pivotally supported by the slidably supported structure so that the tip of the processing head contacts the bottom of the concave portion to follow the configuration of the bottom of the concave portion only by the gravity force of the processing head, the processing head moving in the widthwise direction in

response to the tip contacting either of the side walls of the concave portion when the slidably supported structure is moved relative to the workpiece by the longitudinal drive device.

26.-34. (canceled)

35. (withdrawn) A method for processing a workpiece using a processing device comprising:

moving a supporting device relative to the portion of the workpiece being processed while the processing device is movably supported on the supporting device.

36. (withdrawn) A method according to Claim 35, further comprising moving the supporting device relative to the portion of the workpiece being processed while movably supporting the processing device in a direction that is substantially parallel to a line connecting the supporting device and the portion of the workpiece being processed.

37. (withdrawn) A method according to Claim 35, further comprising moving the supporting device relative to the portion of the workpiece being processed while movably supporting the processing device in a direction that is substantially parallel to a line orthogonal to a line connecting the supporting device and the portion of the workpiece being processed.

38. (withdrawn) A method according to Claim 35, further comprising moving the supporting device relative to the portion of the workpiece being processed while movably supporting the processing device in a direction that is opposite to a surface of the portion being processed.

39. (withdrawn) A method according to Claim 35, further comprising moving the supporting device relative to the portion of the workpiece being processed while movably supporting the processing device in a direction that is substantially orthogonal to a surface of the portion being processed.

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Reply to Office Action dated July 28, 2006

40. (withdrawn) A method according to Claim 35, further comprising moving the supporting device relative to the portion of the workpiece being processed while movably supporting the processing device in a direction that is substantially parallel to a line connecting the supporting device and the portion of the workpiece being processed and in a direction that is substantially parallel to a line orthogonal to the line connecting the supporting device and the portion of the workpiece being processed.

41. (original) An apparatus for processing an automobile body comprising:
a supporting structure comprising a first arm and a second arm,
a first follower frame,
a second follower frame coupled to an end portion of the second arm, the first and second follower frames respectively comprising first, second and third transversely disposed frames, wherein the second transversely disposed frame of the first follower frame is coupled to an end portion of the first arm and the second transversely disposed frame of the second follower frame is coupled to an end portion of the second arm,

a first transverse driving cylinder coupled and transversely disposed with respect to the first arm, the first transverse driving cylinder comprising a rod actuatable to move between an extended position and a retracted position, wherein when the rod is extended in the extended position, the first follower frame is locked in the transverse direction, and when the rod is withdrawn to the retracted position, the first follower frame can freely move in the transverse direction,

a second transverse driving cylinder coupled and transversely disposed with respect to the second arm, the second transverse driving cylinder comprising a rod actuatable to move between an extended position and a retracted position, wherein when the rod is extended in the extended position, the second follower frame is locked in the transverse direction, and when the rod is withdrawn to the retracted position, the second follower frame can freely move in the transverse direction,

a first vertical driving cylinder coupled and vertically disposed with respect to the first arm, the first vertical driving cylinder comprising a rod actuatable to move between an extended position and a retracted position, wherein when the rod is extended in the extended position, the first follower frame is locked in the vertical direction, and when the rod is withdrawn to the retracted position, the first follower frame can freely move or pivot in the vertical direction,

a second vertical driving cylinder coupled and vertically disposed with respect to the second arm, the second vertical driving cylinder comprising a rod actuatable to move between an extended position and a retracted position, wherein when the rod is extended in the extended position, the second follower frame is locked in the transverse direction, and when the rod is withdrawn to the retracted position, the second follower frame can freely move or pivot in the vertical direction,

a first processing device coupled to the first follower frame and

a second processing device coupled to the second follower frame, the first and second processing devices being selected from the group consisting of a spray nozzle and an air gun.

42.-43. (canceled)

44. (previously presented) An apparatus according to Claim 1, wherein the processing device comprises a nozzle for applying a sealant.

45.-46. (canceled)

47. (previously presented) An apparatus according to Claim 25, wherein the processing device comprises a nozzle for applying a sealant.

48. (previously presented) An apparatus according to Claim 1, wherein the longitudinal drive device is coupled to the slidably supported structure, so that the slidably

movable structure is moved in the longitudinal direction of the automobile body by the longitudinal drive device.

49. (previously presented) An apparatus according to Claim 25, wherein the longitudinal drive device is coupled to the slidably supported structure, so that the slidably movable structure is moved in the longitudinal direction of the workpiece by the longitudinal drive device.

50. (previously presented) An apparatus according to Claim 25, further comprising a transverse direction driving device for moving the processing device in a width direction of the workpiece.

51. (previously presented) An apparatus according to Claim 50, further comprising a position detector for detecting the relative positions of the supporting device and the portion of the workpiece being processed, wherein a transverse direction driving device drives the slidably supported structure based on detection signals generated by the position detector.

52. (previously presented) An apparatus according to Claim 25, wherein the processing device is movably supported on the slidably supported structure in a vertical direction of the workpiece.

53. (previously presented) An apparatus according to Claim 52, further comprising a vertical direction driving device for moving the processing device in a vertical direction with respect to the workpiece.

54. (previously presented) An apparatus according to Claim 53, further comprising a position detector for detecting the relative positions of the workpiece and the

supporting device, wherein the vertical direction driving device drives the processing device based on detection signals generated by the position detector.

55. (previously presented) An apparatus according to Claim 25, further comprising a transverse direction driving device for moving the processing device in a width direction of the workpiece and a vertical direction device for moving the processing device in a vertical direction of the workpiece.

56. (previously presented) An apparatus according to Claim 55, further comprising a position detector for detecting the relative positions of the workpiece and the supporting device, wherein the transverse direction driving device and the vertical direction driving device drive the processing device based on detection signals generated by the position detector.

57. (previously presented) An apparatus according to Claim 1, wherein the supporting device comprises a supporting block and a slidably supported structure, the slidably supported structure having a transverse frame movably engaged with the supporting block, wherein the transverse frame freely and exclusively slides within the supported block in a widthwise direction of the automobile body to move the slidably supported structure relative to the automobile body and freely rotates within the supporting block about its longitudinal axis to move the slidably supported structure in a vertical direction of the automobile body relative to the automobile body, wherein such movement of the slidably supported structure is solely and directly in response to the processing device contacting the concave portion while the processing device moves in the substantially longitudinal direction relative to and along the concave portion.

58. (previously presented) An apparatus according to Claim 25, wherein the supporting device comprises a supporting block and a slidably supported structure, the slidably supported structure having a transverse frame movably engaged with the supporting block, wherein the transverse frame freely and exclusively slides within the supported block in a

widthwise direction orthogonal to the longitudinal direction of the workpiece to move the slidably supported structure relative to the workpiece and freely rotates within the supporting block about its longitudinal axis to move the slidably supported structure in a vertical direction of the workpiece relative to the workpiece, wherein such movement of the slidably supported structure is solely and directly in response to the processing device contacting the concave portion while the processing device moves in the substantially longitudinal direction relative to and along the concave portion.

59. (new) An apparatus according to Claim 1, wherein the processing head is positioned diagonally downward during the processing operation of the portion of the automobile body.

60. (new) An apparatus according to Claim 6, wherein the transverse direction driving device is operable to move the processing device to an original position with respect to the widthwise direction of the automobile body, and wherein the transverse direction driving device does not interfere with the processing device during the processing operation.

61. (new) An apparatus according to Claim 9, wherein the vertical direction driving device is operable to move the processing device to an original position with respect to the vertical direction of the automobile body, and wherein the vertical direction driving device does not interfere with the processing device during the processing operation.

62. (new) An apparatus according to Claim 25, wherein the processing head is positioned diagonally downward during the processing operation of the portion of the workpiece.

63. (new) An apparatus according to Claim 50, wherein the transverse direction driving device is operable to move the processing device to an original position with

respect to the widthwise direction of the workpiece, and wherein the transverse direction driving device does not interfere with the processing device during the processing operation.

64. (new) An apparatus according to Claim 53, wherein the vertical direction driving device is operable to move the processing device to an original position with respect to the vertical direction of the workpiece, and wherein the vertical direction driving device does not interfere with the processing device during the processing operation.